

Acacia burrowsiana (Leguminosae: Mimosoideae), a new arid zone species from near Mt Magnet, Western Australia

Bruce R. Maslin

Western Australian Herbarium, Department of Environment and Conservation, Locked Bag 104, Bentley Delivery Centre,
Western Australia 6983

Abstract

Maslin, B.R. *Acacia burrowsiana* (Leguminosae: Mimosoideae), a new arid zone species from near Mt Magnet, Western Australia. *Nuytsia* 17: 241–246 (2007). *Acacia burrowsiana* Maslin, a new species of *Acacia* Mill. referable to sect. *Juliflorae* (Benth.) Maiden & Betche is described. It occurs in the south-west arid zone of Western Australia where it is known from only near Mt Magnet and Sandstone. *Acacia burrowsiana* was listed under its phrase name, *Acacia* sp. Mt Magnet (T. McKenzie 5), as a Priority One species under the Department of Environment and Conservation's Conservation Codes for Western Australian Flora.

Introduction

The new species described below as *Acacia burrowsiana* Maslin was first brought to my attention in 1992 by Trevor McKenzie who collected specimens from the lease area of an active gold mine on the outskirts of Mt Magnet township, Western Australia. Geoff Cockerton subsequently surveyed the area and showed that less than 1000 plants of the species exist on the lease, and that there was very little seedling recruitment. The general region in which the species occurs is not especially remote, but it is relatively poorly collected. Although *A. burrowsiana* favours calcareous soils there is insufficient knowledge of its habitat requirements to determine with certainty what factors might be controlling its distribution. It is not known if future studies will show the species to be more common than current collections indicate. *Acacia burrowsiana* is listed under its phrase name, *Acacia* sp. Mt Magnet (T. McKenzie 5), as a Priority One species on the Department of Environment and Conservation's "Declared Rare and Priority Flora List" (Atkins 2006).

Taxonomy

Acacia burrowsiana Maslin, *sp. nov.*

Fruticuli et arbores divaricatae 2–5(–6) m altae, truncis et ramis leviter contortis. *Surculi novelli* dense adpresse-pilosi, pilis initio flavis mox deinde albis. *Phyllodia* anguste linearia, linearia-oblongeolata, vel linearia-elliptica, ad basim angustata, acuta vel brevi-acuminata, 7–13 cm longa, (2–)3–5(–7) mm lata, coriacea, sub-rigida, recta vel leviter incurva, erecta; *nervi parralleli longitudinales* indistincti, numerosi, conferti, non anastomosantia. *Glandes* 3–4 secus marginem superiorem phyllodii ornatae,

non prominentes. *Spicae* interruptae, 10–20 mm longae; *pedunculi* 2–7 mm longi, glabri. *Flores* 4-meri; *calyx* cupulatus, longitudine c. $\frac{1}{4}$ partes petalorum aequantius vel minus quam. *Legumina* moniliformia, (5–)6–8(–13) cm longa, 5–7 mm lata, tenuiter crustacea vel leviter sub-lignosa, glabra. *Semina* in legumentes longitudinaliter disposita, 4–6(–7) mm longa, 3.5–4.5 mm lata; *arillus* parvus, pileiformis.

Typus: near Mt Magnet township, Western Australia [precise locality withheld for conservation purposes], 18 October 1994, G. Cockerton 275 (*holo*: PERTH 04106075; *iso*: AD, CANB, K, MEL, NSW, NY).

Acacia sp. Mt Magnet (T. McKenzie 5), Western Australian Herbarium, in FloraBase, <http://florabase.dec.wa.gov.au> [accessed June 2007].

Photographs. WorldWideWattle [online at www.worldwidewattle.com].

Spreading *shrubs* or *trees* 2–5(–6) m tall, growth form with 2–4 slightly contorted main trunks (the largest to c. 30 cm in diam.), the upper branches similarly contorted with some tending to spread horizontally, crowns dense and 3–7 m wide. *Bark* grey, fibrous and longitudinally fissured on trunks and main branches, smooth on upper branches. *New shoots* densely appressed-hairy, the hairs yellow at first but soon aging white. *Branchlets* terete, very finely ribbed (ribs most evident immediately below insertion of phyllodes), glabrous except often with minute, straight, closely appressed, silvery white hairs towards the extremities and in axil of phyllodes (hairs difficult to see in the absence of magnification). *Phyllodes* narrowly linear to linear-oblongate or linear-elliptic, narrowed towards the base, 7–13 cm long, (2–)3–5(–7) mm wide, coriaceous, sub-rigid, straight to shallowly incurved, erect, glabrous or with minute, obscure hair as on branchlets, pale green to sub-glaucous; parallel *longitudinal nerves* indistinct, numerous, close together, of uniform prominence or a few (1–3) slightly more pronounced than the rest, none anastomosing; narrowed at *apices* to an acute or short-acuminate hard point that is innocuous or more commonly coarsely pungent; *pulvinus* 1–2.5 mm long, transversely wrinkled and brown when dry. *Glands* 3–4 along upper margin of phyllode, the lowermost (0–)2–10 mm above the pulvinus, indistinct (small and not, or only slightly, raised above the margin). *Inflorescences* mostly simple, 1 or 2 (rarely 3) within axil of phyllodes, very rarely rudimentary racemes with axes less than 0.5 mm long; *spikes* interrupted, 10–20 mm long; *peduncles* 2–7 mm long, glabrous; *receptacle* glabrous. *Flowers* 4-merous; *calyx* gamosepalous, cupular, about $\frac{1}{4}$ or less the length of the petals, truncate to very shallowly dissected with broadly triangular, non-thickened, glabrous or minutely ciliate lobes, calyx tube nerveless and glabrous; *petals* nerveless, glabrous, strongly recurved following anthesis. *Pods* moniliform with distinct but narrow constrictions between the seeds, (5–)6–8(–13) cm long, 5–7 mm wide, curved to irregularly sigmoid or twisted, thinly crustaceous or (just prior to maturity) slightly sub-woody, glabrous, brown; *margins* yellow to light brown and not thickened. *Seeds* longitudinal in the pods, irregularly ellipsoid to widely ellipsoid or \pm depressed-globose (2.5–3 mm thick), (4–)6–7 mm long, 3.5–4.5 mm wide, brown to almost blackish, with a satin lustre; *pleurogram* 'u'- or 'v'-shaped with a wide opening towards the hilum; *areole* 1.5–2.5 long, 1–1.5 mm wide; *funicle* short, filiform, abruptly expanded into a small, pileiform *aril*. (Figure 1)

Characteristic features. *Shrubs* or *trees* with growth form similar to Snakewood (*A. xiphophylla* E.Pritz.), the main trunks and branches slightly contorted. *New shoots* densely appressed-hairy, hairs yellow at first but soon aging white. *Phyllodes* narrowly linear to linear-oblongate or linear-elliptic, narrowed towards the base, 7–13 cm long, (2–)3–5(–7) mm wide, coriaceous, sub-rigid, straight to shallowly incurved, erect, pale green to sub-glaucous; parallel *longitudinal nerves* numerous and indistinct; *apices* acute or short-acuminate and often coarsely pungent. *Glands* 3–4 along upper margin



Figure 1. Holotype of *Acacia burrowsiana* (G. Cockerton 275), scale = 5 cm.

of phyllode, indistinct. *Inflorescences* mostly simple; *spikes* interrupted, 10–20 mm long; receptacle glabrous; *peduncles* 2–7 mm long, glabrous. *Flowers* 4-merous; *calyx* cupular, c. $\frac{1}{4}$ or less the length of the petals, truncate to very shortly triangular-lobed. *Pods* moniliform, (5–)6–8(–13) cm long, 5–7 mm wide, thinly crustaceous or (just prior to maturity) slightly sub-woody. *Seeds* longitudinal in the pods, *funicle* filiform and abruptly expanded into a small, pileiform *aril*.

Selected specimens examined. WESTERN AUSTRALIA: [localities withheld] North of Mt Magnet township: 20 Apr. 1997, B. Crespi P32 (PERTH); 2 June 1994, B.R. Maslin 7337 (K, MEL, PERTH), 7338 (K, MEL, PERTH); 14 Oct. 1999, B.R. Maslin, J. Miller, L. Sweedman & B. Cole BRM 7896 (PERTH); Nov. 1992, T. McKenzie 5 (PERTH). North of Sandstone: 4 Sep. 2006, B.R. Maslin 8968 (NSW, PERTH), 8969 (NSW, PERTH).

Distribution. Based on current knowledge *A. burrowsiana* is known from only two general areas, near Mt Magnet township and about 150 km to the east from near Sandstone (Western Australian Herbarium 1998–). It is most common immediately to the north of Mt Magnet where it extends over a distance of 12 km in a north-south direction and 5 km east-west; a smaller population is located about 5 km further north from near the now-abandoned ‘Baxters Welcome’ minesite. Population surveys conducted by Geoff Cockerton (pers. comm.) to the north of Mt Magnet (but excluding the ‘Baxter Welcome’ population) show that there are less than 1000 plants scattered over the area; these occur either as single plants or in small populations of 50–100 plants. This area has been extensively mined for many years and an operational mine exists in the immediate vicinity. *Acacia burrowsiana* may once have been more common in this region than it is today because it is possible that plants were felled for firewood or used as mine props. Scarcely any seedling recruitment has been observed in these populations. It is not known how many plants occurred in the ‘Baxters Welcome’ population or in the small population to the north of Sandstone.

Habitat. North of Mt Magnet *A. burrowsiana* grows in red-brown loam on plains with quartz and ironstone rubble on the surface and a weathered gypsum duricrust (lateritic in nature) at shallow depth. Although it grows along seasonally dry water courses in this region, it is not confined to these situations. The population north of Sandstone occurred immediately below the summit of a low rocky rise (? in calcareous soil).

Flowering and fruiting period. The paucity of collections makes it difficult to accurately determine the phenology of this species. Also, it is probable that of *A. burrowsiana* flowers and fruits in response to the timing and intensity of rainfall, which in the area where it grows is somewhat erratic but with peak falls tending to occur in both summer and winter. Inflorescence buds are present in mid-October and flowers at anthesis have been collected in early November and early January (buds are often also present during this period). Pods with mature seeds have been collected in October and November (during which time buds and flowers at anthesis may also be present on the plants), April and in June (at which time most pods have dropped their seed).

Conservation status. *Acacia burrowsiana* is listed, under the phrase name of *Acacia* sp. Mt Magnet (T. McKenzie 5), as a Priority One species by Atkins (2006).

Etymology. It is very fitting that this new species be named for Dr Neil Burrows, Director of Science Division, Department of Environment and Conservation. Neil, whose ancestors were early European settlers/pioneers in Mt Magnet (arriving there around 1890), has been most supportive of my *Acacia* research since assuming his role as Director in 1996.

In the local Aboriginal dialect of Mt Magnet *A. burrowsiana* is known as *Waarda* (a generic term for a tree or shrub).

Variation. Some plants of *A. burrowsiana* display a somewhat surprisingly wide range of variation in phyllode width. For example, in the 'Baxters Welcome' population the phyllodes from adjacent plants were 5–6 mm wide (B.R. Maslin 7337) and 2–3 mm wide (B.R. Maslin 7338), while in the population north of Sandstone (150 km east of 'Baxters Welcome') the phyllodes on adjacent plants measured 3–5 mm wide (B.R. Maslin 8968) and about 2 mm wide (B.R. Maslin 8969). The reason for this variation is unknown, but it does not seem to be related to the age of the plants.

Affinities. *Acacia burrowsiana* belongs to *Acacia* sect. *Juliflorae* (Benth.) Maiden & Betche and is seemingly most closely related to the more northerly distributed *A. xiphophylla* E.Pritz. (Snakewood), which has a similar growth form, spicate inflorescences with somewhat loosely arranged flowers, cupular calyces that are very shortly divided into broadly triangular lobes, and phyllodes that have a more or less similar shape, length, texture, colour, nervature and coarsely pungent apices. *Acacia xiphophylla*, which ranges from Shark Bay northeast through the Ashburton district to the Pilbara region, with an outlier near Wiluna, is distinguished from *A. burrowsiana* in the following ways: phyllodes broader (mostly 6–13 mm wide), peduncles and receptacles appressed-hairy, spikes longer (25–55 mm), flowers mostly 5-merous, calyx often golden hairy, pods flat and normally wider (mostly 9–15 mm) and seeds clearly flattened and generally larger (6–11 mm long). *Acacia intorta* Maslin (1983: 398–402), a close relative of *A. xiphophylla* and with a similar Snakewood growth form, is normally recognized by its \pm terete, needle-sharp phyllodes. However, on Tangadee Station (about 400 km north of Mt Magnet) and in the Pilbara region, there are some individuals with flat phyllodes that may superficially resemble *A. burrowsiana*; however, these variants of *A. intorta* are recognized by their slightly narrow phyllodes (2–4 mm wide) that are very sharply pointed, and their flat pods, which are 5–8 mm wide.

Two other species growing in the vicinity of *A. burrowsiana* at Mt Magnet and which have a more or less similar growth form are *A. eremaea* C.Andrews (recognized by its round flower heads on peduncles 5–17 mm long, and mostly narrowly elliptic, broader phyllodes 6–17 mm wide) and *A. oswaldii* F.Muell. (recognized by its sharply pungent, narrow phyllodes about 1 mm wide, sessile, globular, few-flowered heads and long, linear, thick-textured pods with seeds having a conspicuous yellow-orange aril). Taxonomically *A. eremaea* is related to *A. xiphophylla*, *A. intorta* and *A. burrowsiana* but *A. oswaldii* is very distant.

In general phyllode characters such as shape, size, colour, apex, and multiple marginal glands, *A. burrowsiana* is superficially very similar to an entity of uncertain taxonomic status that occurs on Earraheedy Station, 170 km due north-east of Mt Magnet. This entity is lodged at the Western Australian Herbarium (PERTH) under its phrase name, *Acacia* sp. Earraheedy (I. Kealley IEK 019), and is known from just two fruiting collections, I. Kealley IEK 019 and 020 (both PERTH). Judging from its pods (hard-textured, coarsely wrinkled, about 1 cm wide) and phyllode nervature (nerves widely spaced) this entity is more closely related to *A. cuthbertsonii* Luchm. and these characters readily distinguish it from *A. burrowsiana*.

Acknowledgements

Trevor McKenzie, Environmental Officer with Western Mining Corporation's Hill 50 Gold N.L. (this

company now operates as BHP Billiton Nickel West) is thanked for drawing my attention to this new species and for collecting both flowering and fruiting specimens of it. These specimens were gathered from a mining lease which is currently owned by Mt Magnet Gold N.L. and this company is thanked for their efforts in helping to protect the surviving plants. Geoff Cockerton (Managing Director, Landcare Holdings Pty Ltd) is gratefully acknowledged for providing specimens and invaluable ecological and other information concerning the plants on this lease. Paul Wilson is thanked for preparing the Latin description and Carrie Buscumb for technical assistance.

References

- Atkins, K.J. (2006). "Declared Rare and Priority Flora list for Western Australia." (Department of Environment and Conservation: Kensington, Western Australia.)
- Maslin, B.R. (1983). Studies in the genus *Acacia* (Leguminosae: Mimosoideae) - 14. New taxa from north-west Western Australia. *Nuytsia* 4(3): 383–410.
- Western Australian Herbarium (1998–). FloraBase – The Western Australian Flora. Department of Environment and Conservation. <http://florabase.dec.wa.gov.au/> [accessed June 2007]